



Childhood Obesity and Dental Caries Webinar Training Series



Dental Caries in Children

*Evidenced-Based Recommendations
in Clinical and Public Health
Practices*

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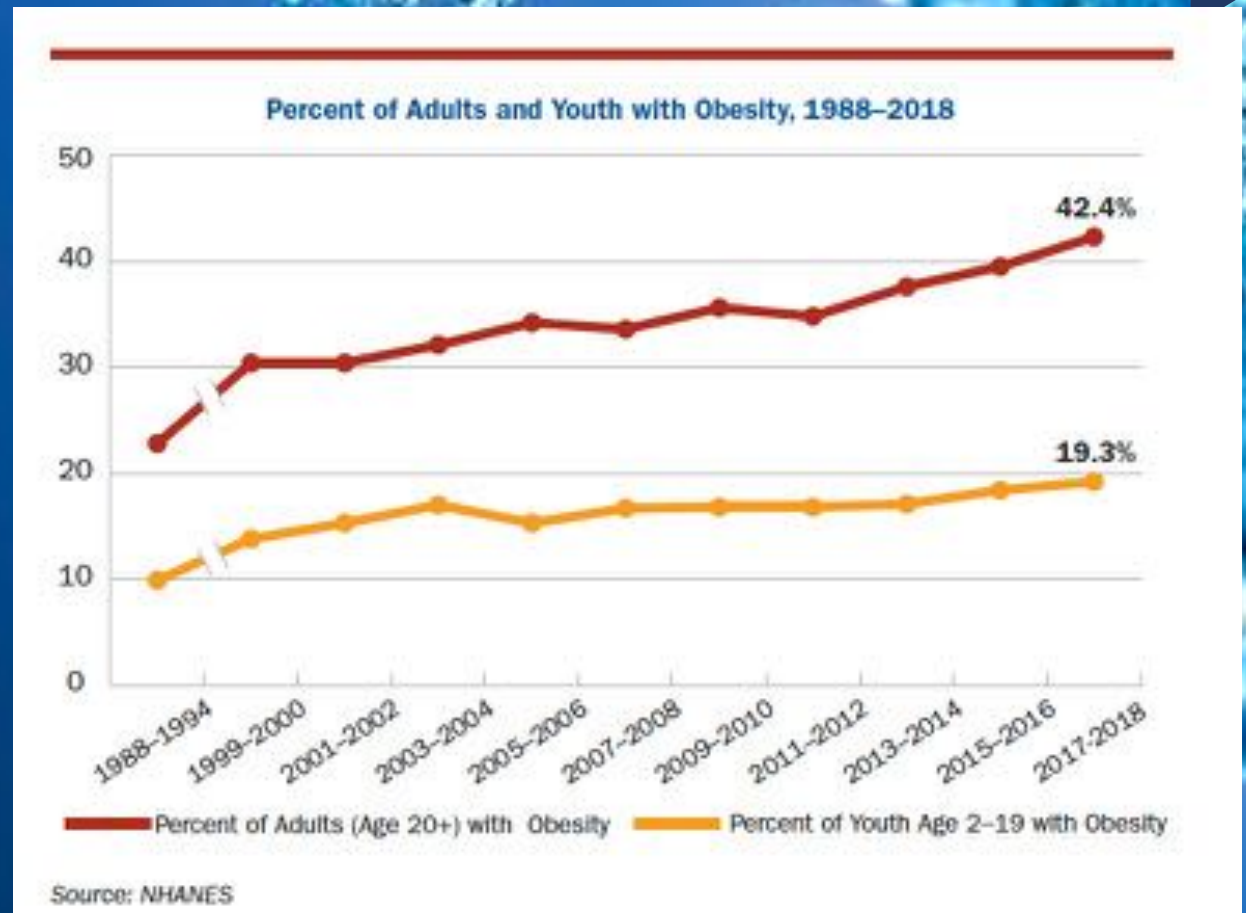


Learning Objectives

- **Describe the epidemiology and etiology of dental caries in children**
- **Discuss the role of sugar-containing beverages (SSBs) in caries disease and prevention**
- **Discuss the evidence-based recommendations for caries prevention and management**

Obesity

- Diabetes
- Heart disease
- Stroke
- Depression
- Cancer
- COVID19
- Higher mortality





Obesity rates, children ages 10 to 17

Obesity rates, children ages 10 to 17



Rank	State	Obese 10-17% 2011
1	Kentucky	23.8%
2	Mississippi	22.7%
3	South Carolina	22.1%
4	Tennessee	20.4%
5	Arkansas	20.2%
6	Louisiana	20.1%
7	West Virginia	19.6%
8	Oklahoma	18.8%
9	Florida	17.8%
10	Maryland	17.6%

Dental Caries

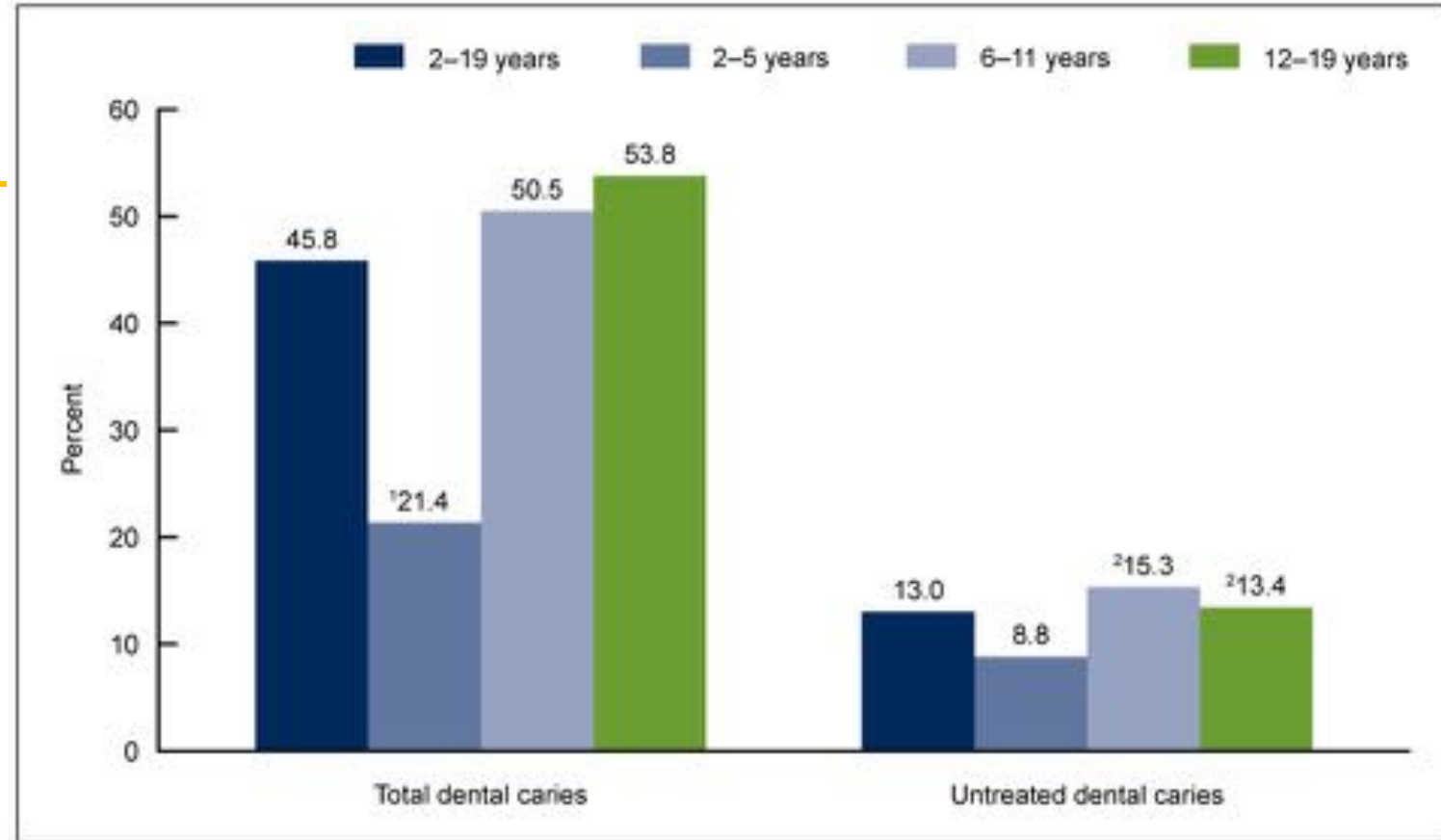
- Dental caries is the most prevalent chronic infectious disease and unmet health need, especially among low-income children.
- Untreated caries can cause pain and infections.
- Oral diseases can affect systemic health.
- Obesity and dental caries are multifactorial diseases in children and share common nutritional risk factors.
- Disparities exist in oral health and access to care.
- Dental caries and obesity are preventable or at least controllable.



Dental Caries Epidemiology

- 5 X more common than asthma
- 46% of children had treated or untreated dental caries (NHANES)
- 13% of children had untreated dental caries (NHANES)
- Florida (2018):
 - 25% of 3rd graders had untreated dental caries
 - 35% of Black
 - 23% White
 - 21% Hispanic
 - 34% of Head Start children had dental caries and 24% had untreated dental caries (FLDOH)

Figure 1. Prevalence of total dental caries and untreated dental caries in primary or permanent teeth among youth aged 2–19 years, by age: United States, 2015–2016



¹Significant linear trend with increasing age.

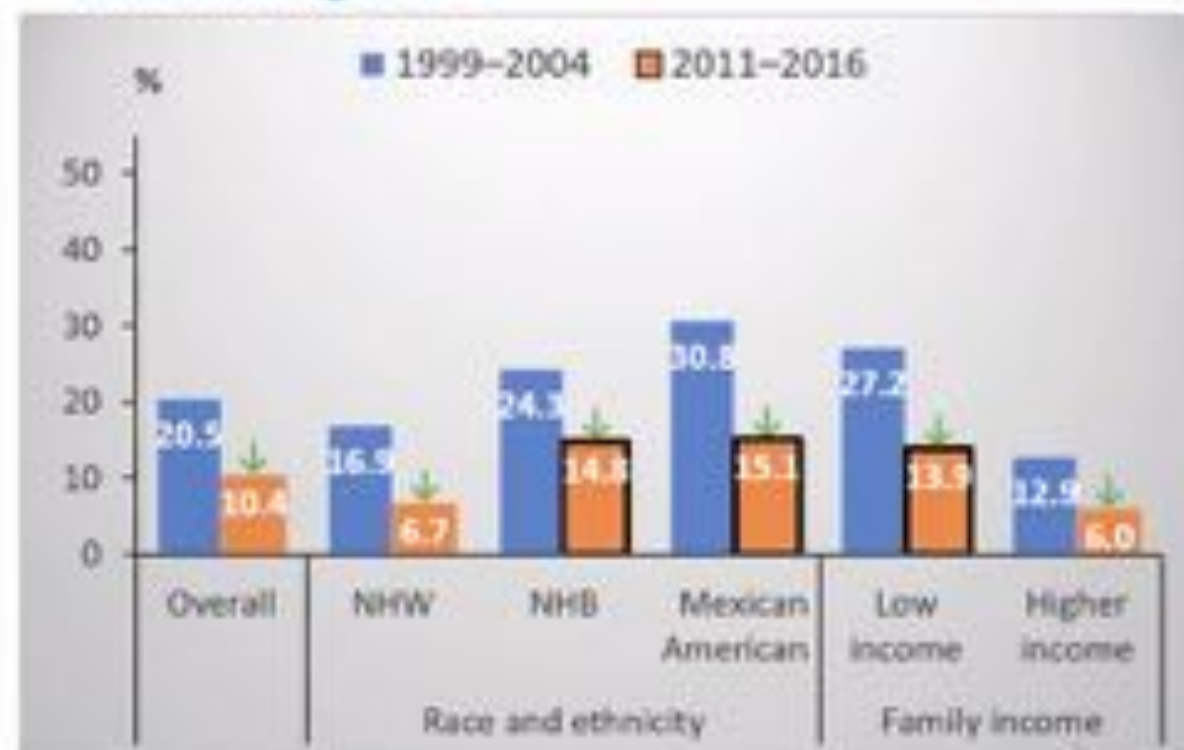
²Significantly different from youth aged 2–5 years.

NOTES: Total dental caries included untreated and treated caries. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db307_table.pdf#1.

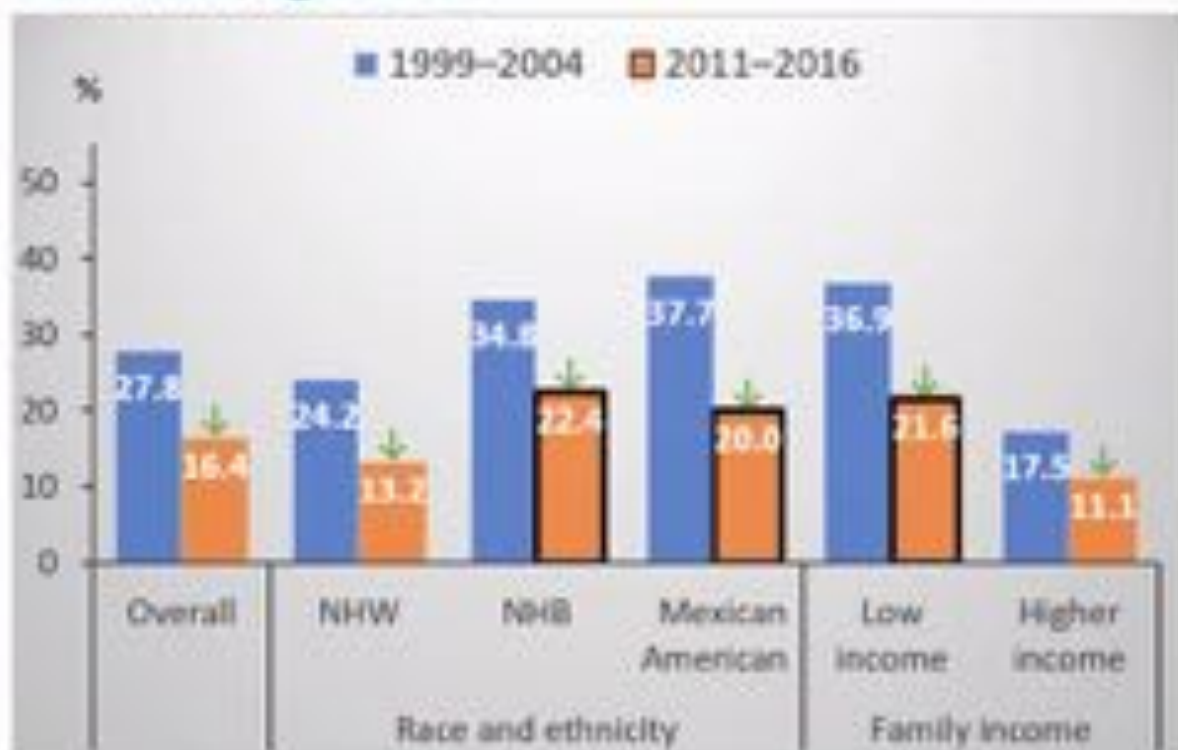
SOURCE: NCHS, National Health and Nutrition Examination Survey, 2015–2016.

UNTREATED DECAY IN PRIMARY TEETH

Children Ages 2–5



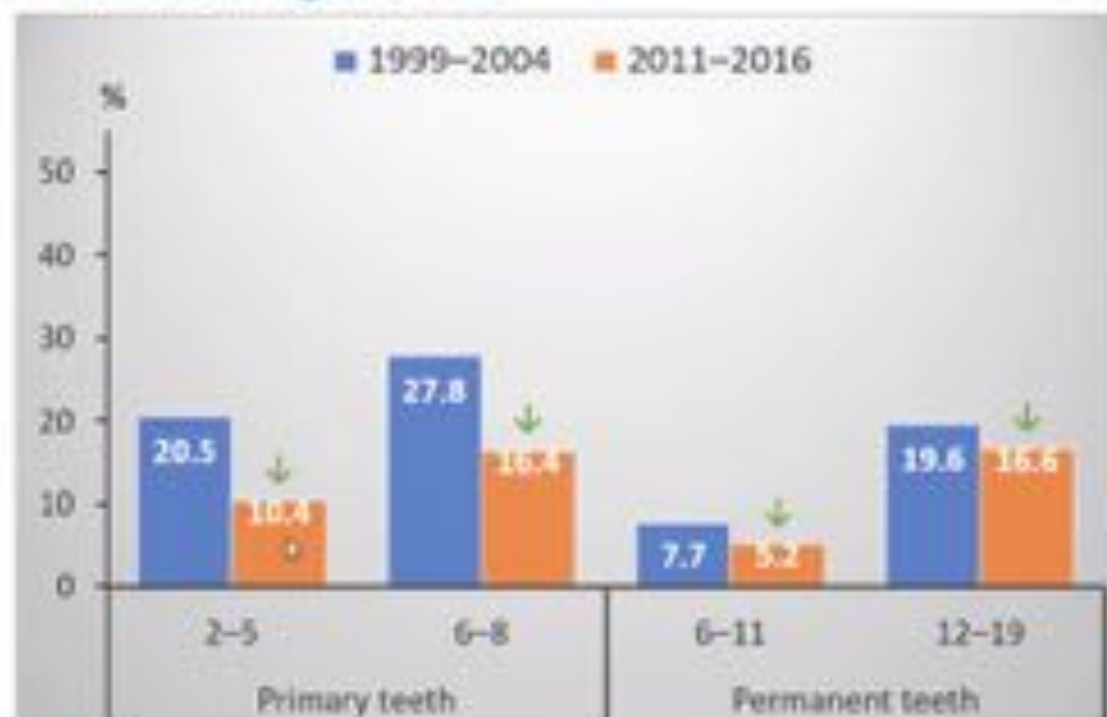
Children Ages 6–8



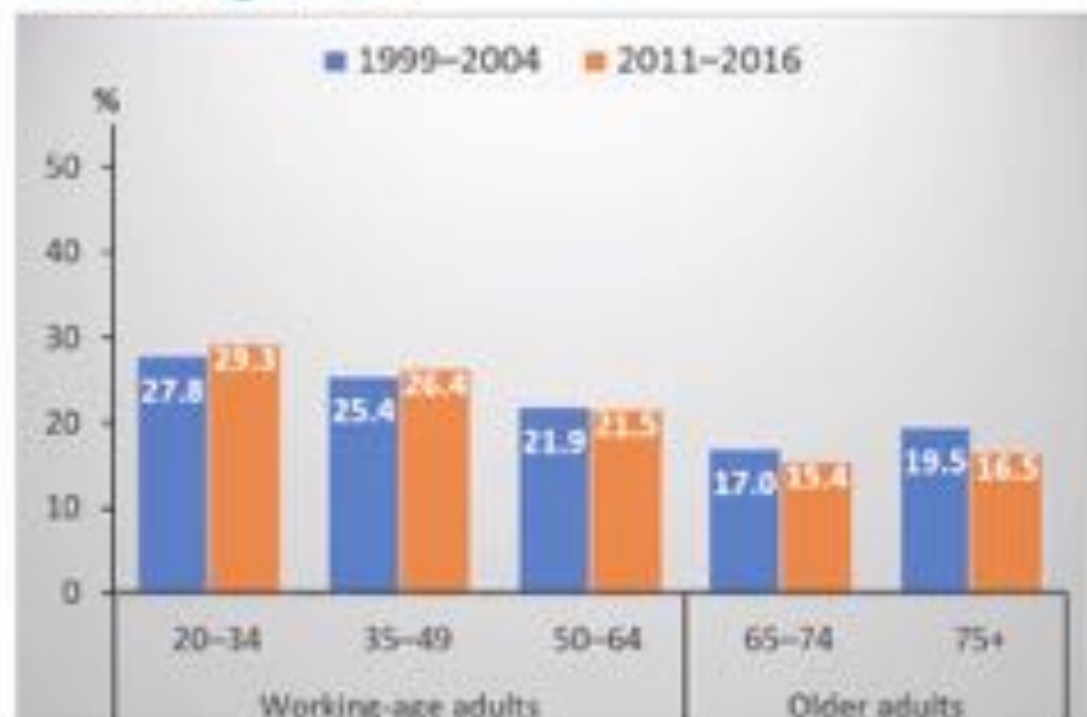
↓: Significant decline from 1999–2004. □: Significant difference from reference group in 2011–2016. NHW: Non-Hispanic White. NHB: Non-Hispanic Black.

UNTREATED DECAY ACROSS LIFE STAGES

Children Ages 2–19



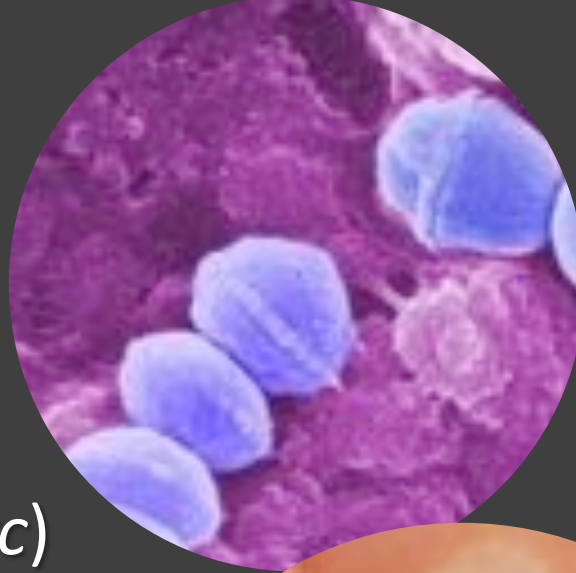
Adults Ages ≥20



↓: Significant decline from 1999–2004

Dental Caries

- Biofilm bacteria (*S. mutans* etc) metabolize sugars from carbohydrates into acid.
- Over time this acid demineralizes the tooth.
- CAVITY = decay



How Does Infection Occur?

- Cariogenic bacteria - *S. mutans* colonizes in the oral cavity around the time of tooth eruption
- Most likely infants become infected from their mothers, caregivers, siblings or other individuals in close contact
- Infants whose mothers harbor high levels of *S. mutans* become colonized more readily than infants of mothers with low levels





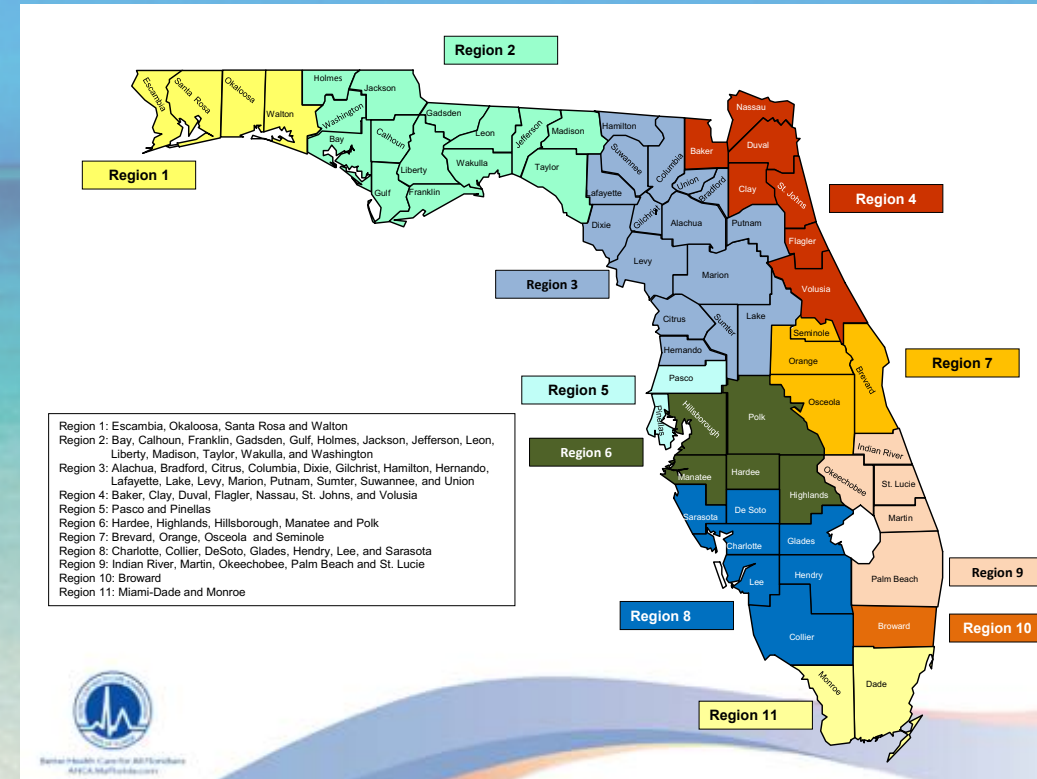
Early Childhood Caries (ECC)



- “Nursing caries” or “baby bottle tooth decay”
- A severe, rapidly progressing form of tooth decay in children < 6 years of age
- Prevalence: 5% of all US children; 30-50% of low-income children
- Florida: 6% of Early Head Start children and 18% of Head Start children had ECC

FLORIDA ISSUES

- ✓ Large Medicaid, low-income, immigrant and rural populations
- ✓ 25% of 3rd graders with untreated dental caries
- Low Medicaid utilization in 2018 (ACHA, 2019)
 - US: 50%
 - Florida: 41%
 - Hillsborough 38% for children ; 8.8% for adults
- Dentist population ratio (ACHA, 2019)
 - US: 61 dentists per 100,000.
 - Florida: 56 dentists per 100,000
 - Hillsborough: 62 dentists per 100,000; total of 274 dentists



Medicaid Utilization

Dentist Participation in Medicaid or CHIP, 2016



Source: American Dental Association, Health Policy Institute

Geographic Variation in the Percentage of Eligibles Ages 1 to 20 who Received Preventive Dental Services



Source: 2019 Child Care Set Chart Pack (October 2020)

Mathematical analysis of Form OHS-416 reports derived SP2021 reports, Lines 10 and 12, for the 2019 reporting cycle as of July 1, 2020 (n = 51 states)

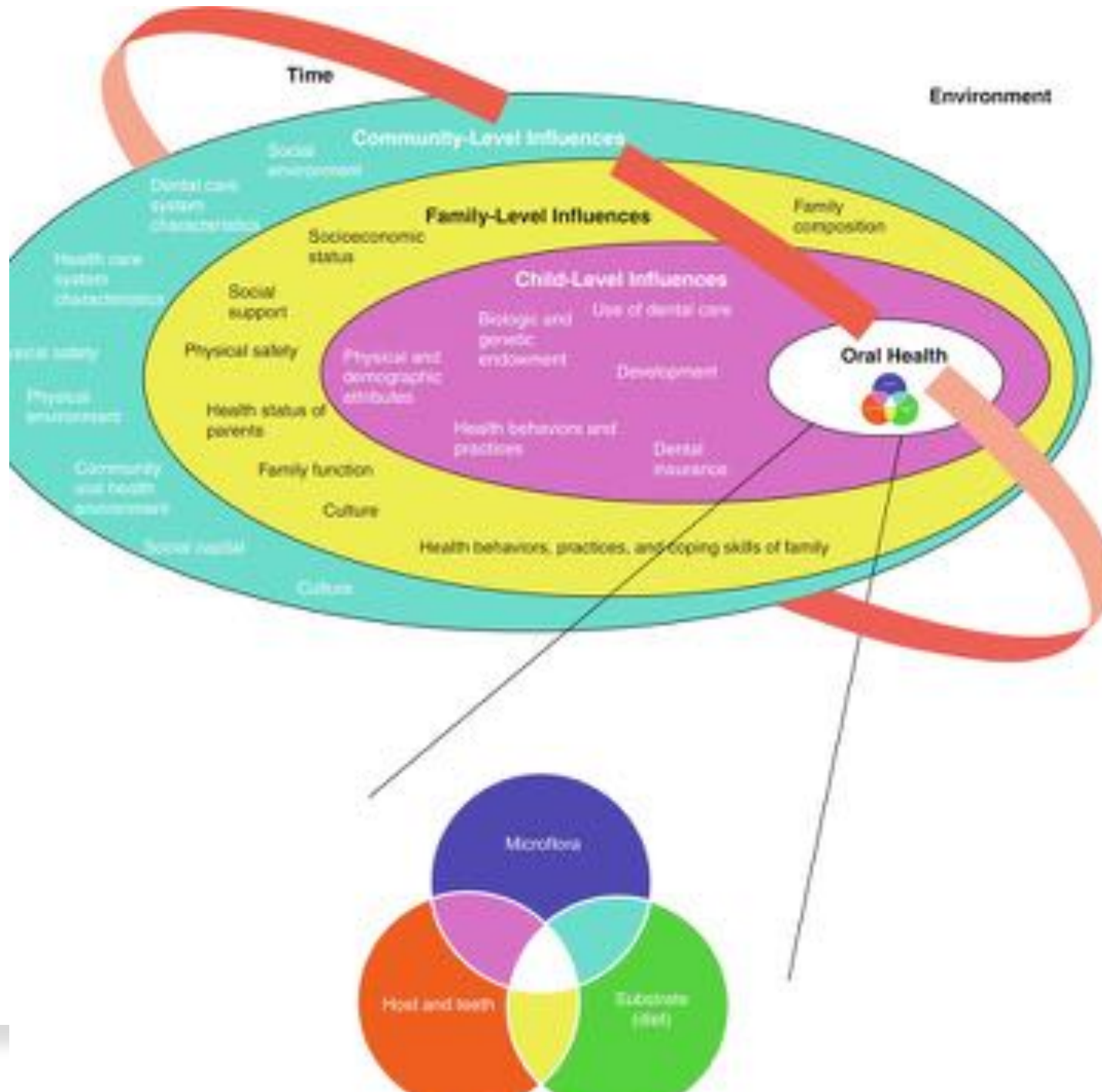
Hospital Emergency Department (ED) visits for preventable dental reasons in 2018

- **Florida: 117,247 ED visits with total hospital charges of \$323,434,519.**
- **Hillsborough County: 7,286 ED visits with total hospital charges of \$22,823,353**

Emergency Department Visits for Dental Conditions



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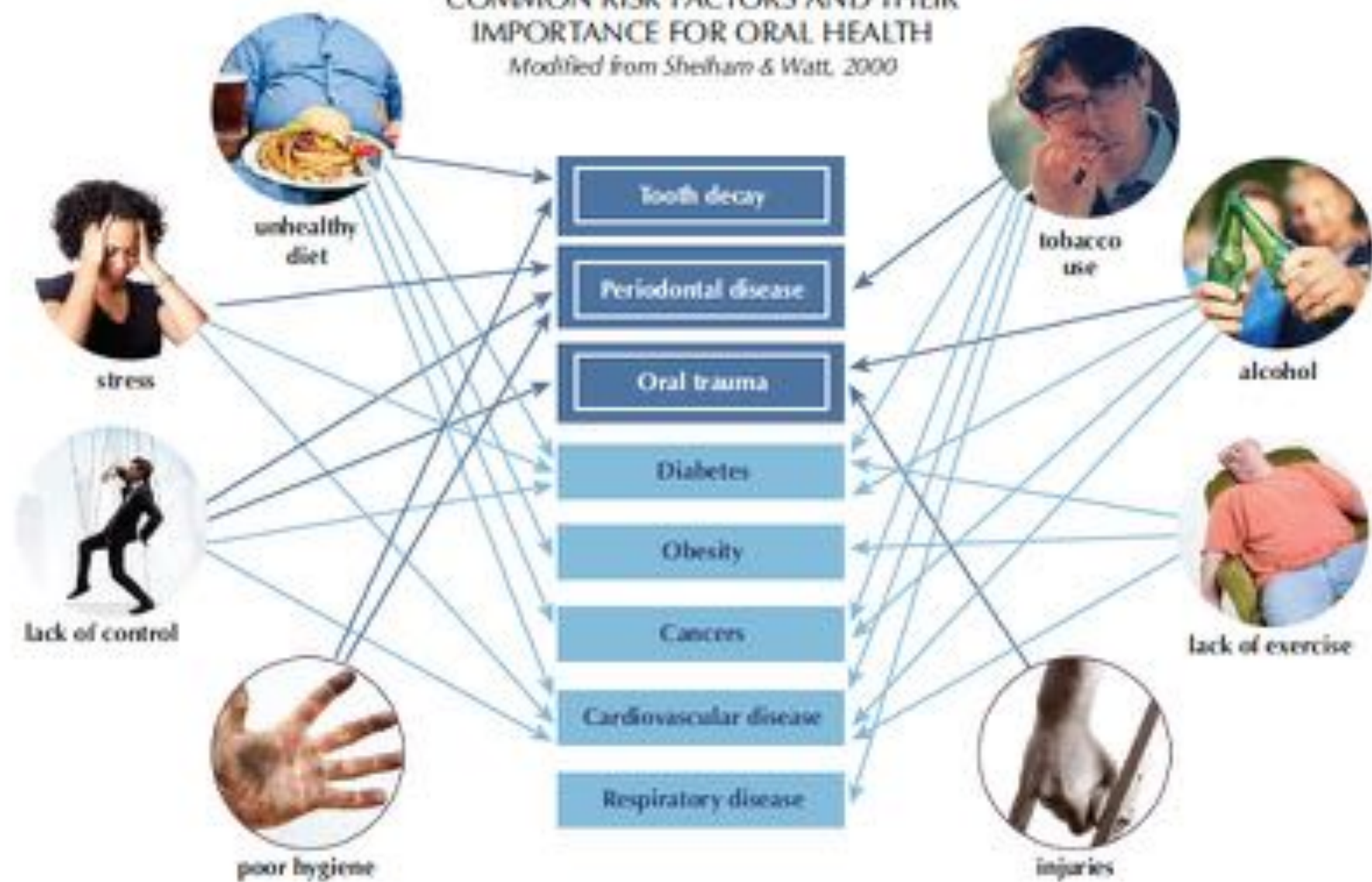


Social Determinants of Health

Fisher-Owens S.A., Gansky S.A., Platt L.J., et al. Influences on children's oral health: a conceptual model. *Pediatrics*. 2007;120(3):e510–e520.

COMMON RISK FACTORS AND THEIR IMPORTANCE FOR ORAL HEALTH

Modified from Sheiham & Watt, 2000



Sugar-Sweetened Beverages (SSBs)



Drinks to which any forms of sugar are added.

soft drinks (soda or pop), fruit drinks, sports and energy drinks, sweetened tea and coffee, sweetened milk or milk alternatives, and any other beverages to which sugar (high-fructose corn syrup or sucrose) has been added



Naturally occurring sugars are found *naturally* in foods such as fruit (fructose) and milk (lactose).



SSBs are the single largest category of caloric intake in children ages 2-18



Children drink >30 gallons of sugary drinks per year.



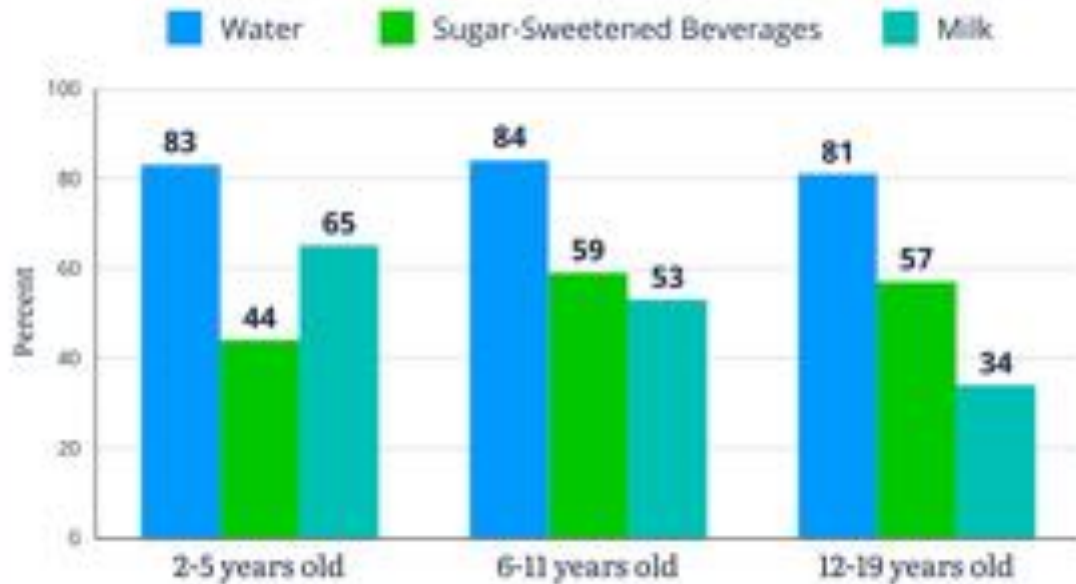
[This Photo](#) by Unknown Author is licensed under CC BY-NC-ND

CDC, AAP
stateofchildhoodobesity.org/sugary-drinks-harm-kids-health/



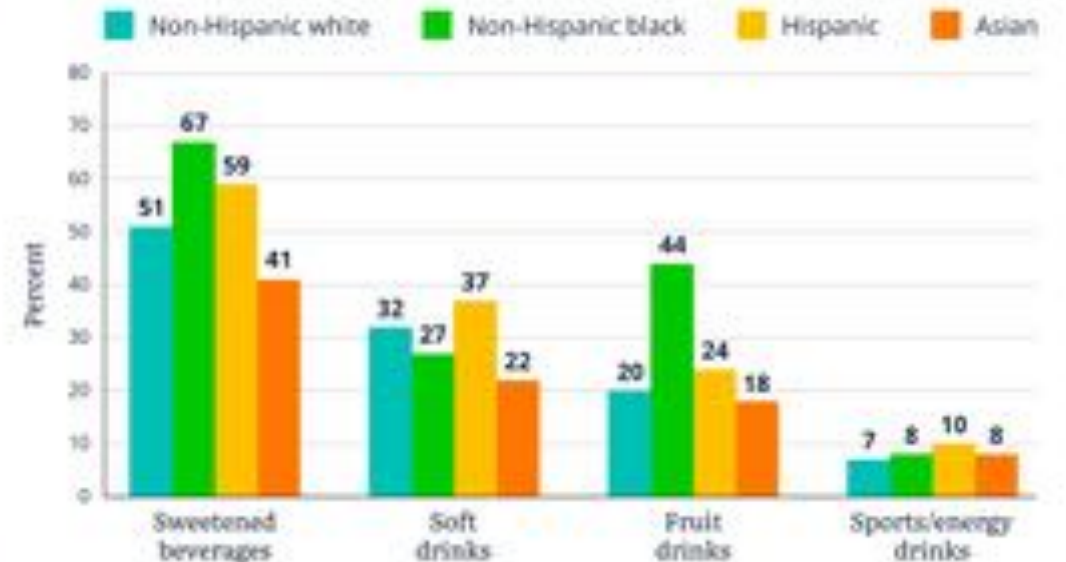
Sugary Drink Consumption in Children

What types of drinks do children consume on any given day?



Source: NHANES, Beverage Choices Among US Children, 2015-16

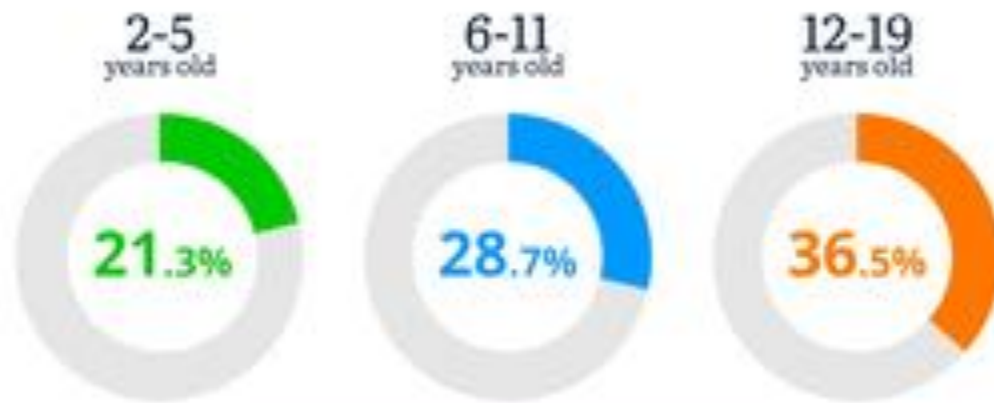
What types of drinks do children consume on any given day (by race and ethnicity)?



Source: NHANES, What We Eat in America, 2015-16

Sugary Drink Consumption in Children

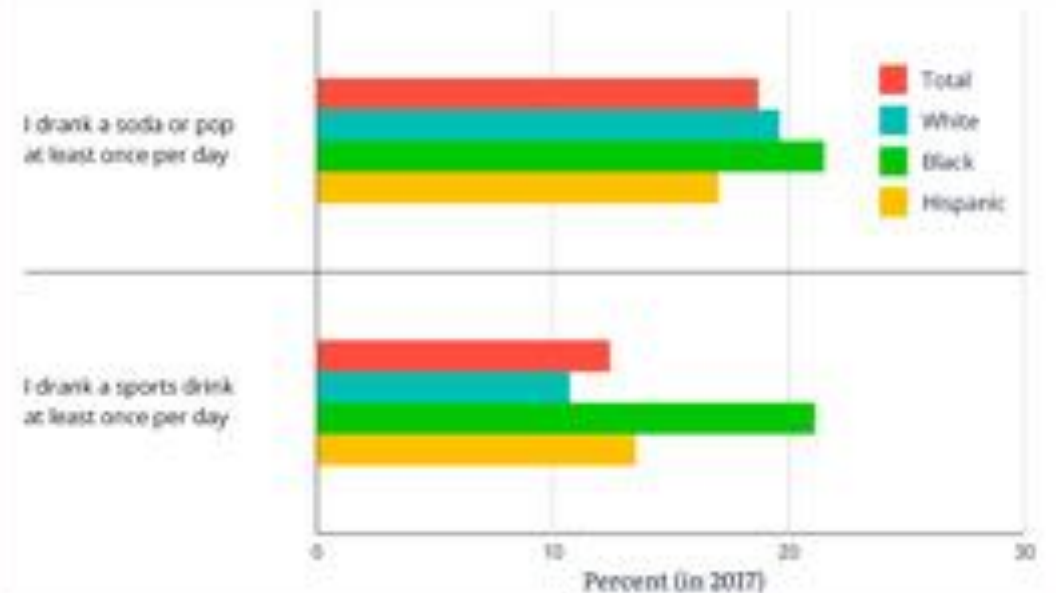
Sugary drinks are the leading source of added sugars in children's diets across, all age groups.



percent of added sugar in children's diets
that comes from sugary drinks

Source: MIMMS, Added Sugars in American's Children's Diets, 2015-16. Note: The other sources of added sugar in children's diets that were studied include sweet bakery products (e.g., cakes, cookies, pies, sand), other desserts, ready-to-eat cereals, and flavored milk.

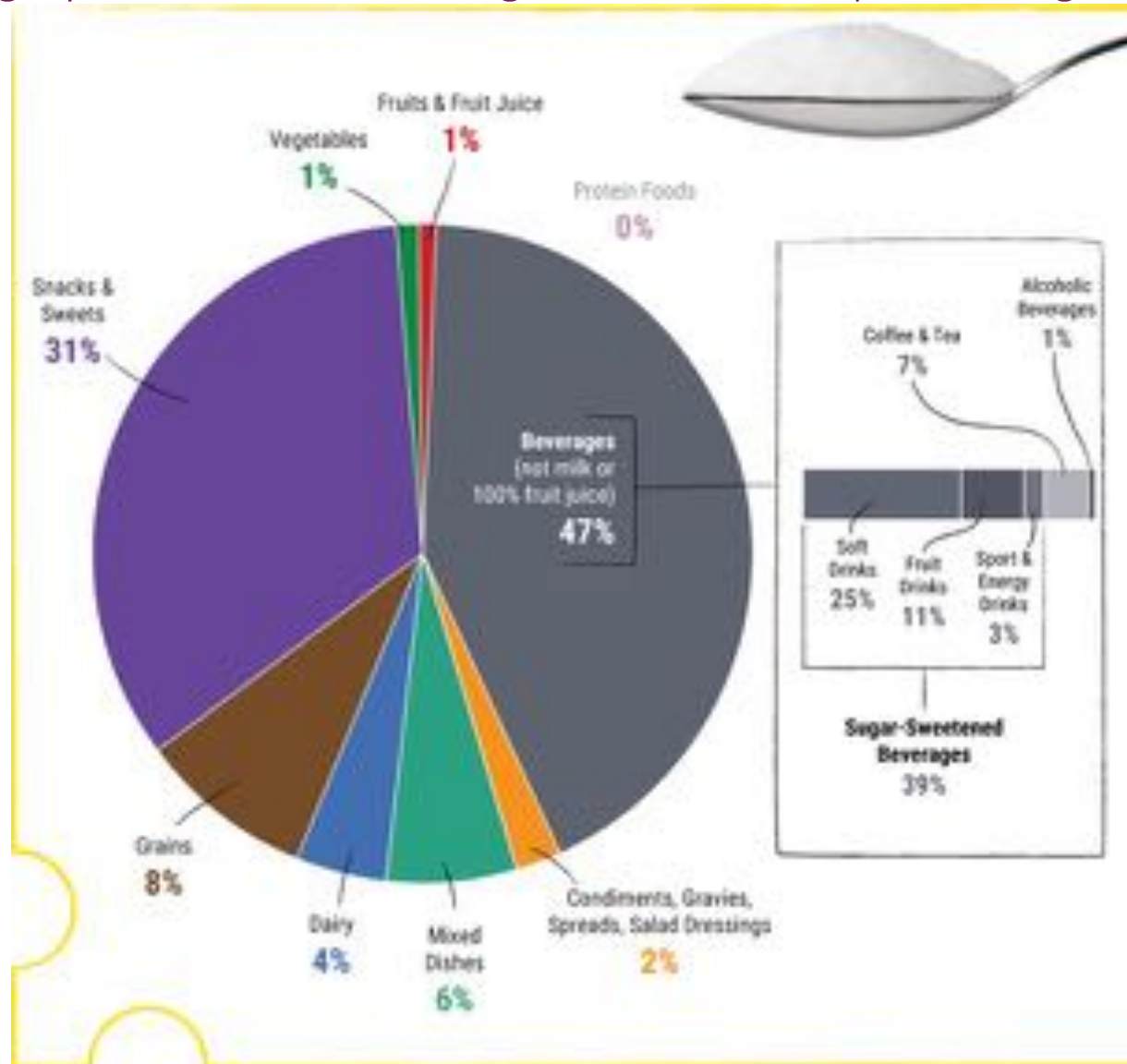
Nearly one in five U.S. high school students drinks a soda or pop at least once a day.



Source: CDC Study, Reduction in Sugary Drink Consumption Among High School Youth, 1999-2011 results.

Food Sources of Added Sugars

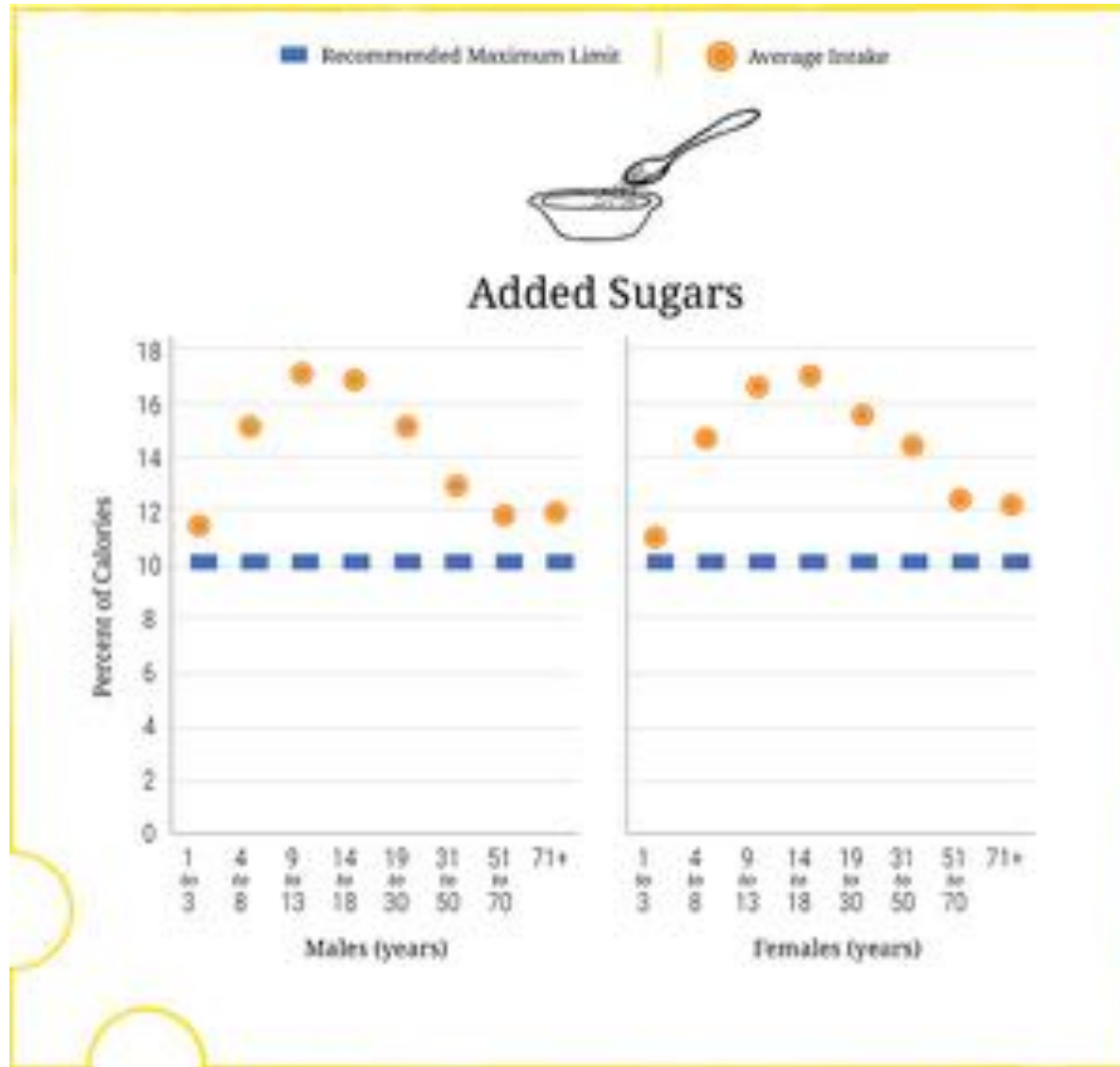
Food Category Sources of Added Sugars in the U.S. Population Ages 2 Years and Older




• **Data Source:** What We Eat in America (WWEIA) Food Category analyses for the 2015 Dietary Guidelines Advisory Committee. Estimates based on day 1 dietary recalls from WWEIA, NHANES 2009-2010.

Added Sugars: Intakes and Limit

Average Intakes as a Percent of Calories per Day by Age-Sex Group, in Comparison to the Dietary Guidelines Maximum Limit of Less than 10 Percent of Calories



 **Consume <10% of calories per day from added sugars**

- U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015 – 2020 Dietary Guidelines for Americans*. 8th Edition. December 2015. Available at <http://health.gov/dietaryguidelines/2015/guidelines/>.
- CDC.gov/nutrition
- What We Eat in America, NHANES 2007-2010 for average intakes by age-sex group.

Limit your sugar intake

- WHO: Reduce the intake of sugar to <10 % of total energy intake, with increased benefits of reducing intake to <5% of calories
- AAPD: Reduce children's risk of weight gain and dental caries, limiting the intake of sugar to <5% of total energy intake per day (<16 grams of sugar for children aged 4–8)
- Breast-feeding of infants prior to 12 months of age to ensure the best health and developmental and psychosocial outcomes
- AHA: Men — 9 teaspoons / 36 grams / 150 calories OR LESS
Women and kids ages 2+ — 6 teaspoons / 25 grams / 100 calories OR LESS
(children under 2 should not consume any added sugars)
- AAP: No juice before 1 year of age





Sugar
Recommendation
Healthy Kids and
Teens Infographic

Healthy Kids are
Sweet Enough

SOURCE: American Heart Association statement Added Sugars and Cardiovascular Disease Risk in Children.

HEALTHY KIDS ARE SWEET ENOUGH

Heart Healthy Tip: **NO MORE THAN 1** Sugary Drink a Week

How many teaspoons of sugar in just one **SMALL 8 OUNCE** serving?



WATER



0 TSPS

SPORTS DRINK



4 TSPS

SWEET TEA



6 TSPS

SODA



6 TSPS

LEMONADE



7 TSPS



Learn more at heart.org/sugar

Source: USDA National Nutrient Database for Standard Reference Release 28



PROMOTING WATER INTAKE



So, how much water is good for kids?



AAPD Recommendations

- **Education regarding daily sugar-consumption, as well as the sugar content of foods, beverages and oral liquid medications.**
- **Dental professionals need to identify children who consume frequent or large quantities of sugar-containing foods and beverages, and who are at risk for dental caries and obesity.**
- **Dental professionals' engagement in nutrition education and provision, when necessary, of appropriate referral for dietary counseling from pediatrician or nutritional specialist.**



Caries Disease

- Etiologically complex multifactorial disease process
- Dynamic disease process that involves the shift of the balance between protective factors (remineralization) and pathological factors (demineralization) to favor demineralization of the tooth structure over time



Biological Risk Factors

Fermentable carbohydrates
Acid-producing bacteria
Hyposalivation

Caries

Protective Factors

Saliva, calcium, phosphate
Remineralization – fluoride
Antibacterial therapy

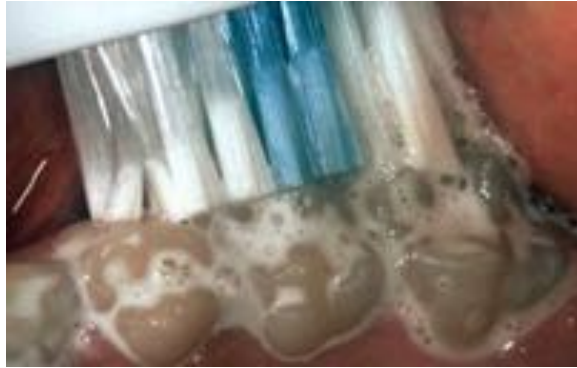
No Caries

Modern Caries Management

Detection

Diagnosis

Risk Assessment



**Preventive + non-surgical + MI
treatment (Medical Model)**

ASSESSMENT

Restorative (Surgical) tx + MI

**Optimal
Oral
Health**



Caries Prevention and Management

- **Behavioral Modification: Oral Hygiene and Diet**
 - 2 x/day toothbrushing 1,100 ppm fluoride toothpaste
- **Topical Fluoride Application for Caries Prevention or Arrest**
 - Professional 5% NaF Varnish (22,600ppm)
 - Home use of 0.5% fluoride (5,000 ppm) (>6 yrs of age)
 - 0.09% fluoride mouthrinse (>6 yrs of age)
 - 38% SDF (anti-microbial and remineralization)
- **Pit-and-Fissure Sealants**
- **Antimicrobial tx**
 - 38% SDF, CHX, xylitol



Nonfluoride Caries Preventive Agents: Evidence-Based Clinical Recommendations¹

Strength of recommendations: Each recommendation is based on the best available evidence. The level of evidence available to support each recommendation may differ.

Strong

Evidence strongly supports providing this intervention

In favor

Evidence favors providing this intervention

Weak

Evidence suggests implementing this intervention **only after alternatives have been considered**

Against

Evidence suggests not implementing this intervention

Expert Opinion

Evidence is lacking. Any recommendation *for or against* is based on expert opinion.

Recommendations for patients at higher risk for caries: Adjuncts to a regular caries preventive program		
Polyol (Coronal Caries)	Advise parents and caregivers of children 5 years or older that use of sucrose-free polyol (xylitol only or polyol combinations) chewing gum for 10 to 20 minutes after meals may reduce incidence of coronal caries	
	Advise adults that use of sucrose-free polyol (xylitol only or polyol combinations) chewing gum for 10 to 20 minutes after meals may reduce incidence of coronal caries.	
	Advise parents and caregivers of children 5 years or older that the daily use of xylitol-containing lozenges or hard candy that are dissolved slowly in the mouth after meals may reduce incidence of coronal caries. (5–8 grams/day divided into two to three doses)	
Chlorehexidine (Root Caries)	Apply 1:1 mixture of chlorhexidine/thymol varnish every three months to reduce the incidence of root caries.	
	Applying 0.5 to 1.0 percent chlorhexidine gel alone or in combination with fluoride for caries prevention of root caries is not recommended .	
	Using 0.12 percent chlorhexidine rinse alone or in combination with fluoride for prevention of root caries is not recommended .	
Chlorehexidine (Coronal Caries)	Applying 1:1 mixture of chlorhexidine/thymol varnish alone or in combination with fluoride for prevention of coronal caries is not recommended .	
	Applying 10 to 40 percent chlorhexidine varnish alone or in combination with fluoride for prevention of coronal caries is not recommended .	
	Applying 0.5 to 1.0 percent chlorhexidine gel alone or in combination with fluoride for prevention of coronal caries is not recommended .	
	Using 0.12 percent chlorhexidine rinse alone or in combination with fluoride for prevention of coronal caries is not recommended .	

There is *insufficient* evidence to make recommendations for xylitol syrup, xylitol in dentifrices, chlorhexidine varnish for root caries, triclosan, iodine, sialogogues, calcium phosphate products or the use of any of these nonfluoride caries preventive agents in pregnant mothers.



¹Rethman MP, Beltrán-Aguilar ED, Billings RJ, et al.; for the American Dental Association Council on Scientific Affairs Expert Panel on Nonfluoride Caries-Preventive Agents. Nonfluoride caries-preventive agents: executive summary of evidence-based clinical recommendations. JADA 2011;142(9):1065–1071. Copyright © 2011 American Dental Association. All rights reserved.

Fluoride Varnishes

- 22,600 ppm fluoride
- Remineralization of early lesions
- Prolonged source of F - Provides F as CaF_2
- 2-4x/year, 3x in a week/year based on the risk level and activity
- Applications by individual needs, surfaces



Silver Diamine Fluoride (SDF)

- ✓ Biannual SDF treatments to reduce pain and infections
 - Decreases dentin hypersensitivity
 - Arrests and prevents dental caries
- ✓ 38% SDF contains ~44,800 ppm F (5%) and ~253,870 ppm Ag (25%)
- ✓ Both fluoride and silver ions contribute to mechanism of action
 - ✓ Silver acts as an anti-microbial agent killing bacteria and preventing the formation of new biofilm
 - ✓ Fluoride prevents demineralization, promotes remineralization



Yamaga et al. 1972

Mei et al. 2013 ; Gao, Zhao, et al. 2016

38% Silver Diamine Fluoride (SDF)

- In 2014, FDA cleared SDF in US for the treatment of dentinal hypersensitivity
- Off-label use for caries treatment
- In 2015, 1 product available in US market: Advantage Arrest, by Elevate Oral Care
www.elevateoralcare.com



A close-up photograph of a child's mouth, showing the upper and lower teeth. The teeth are severely decayed, with many missing or crumbling, and are misaligned. The lips are pink and slightly parted, revealing the extent of the dental issues.

Case Selection

- **Advanced cases or cases involving very young children**
- **Extreme caries risk (xerostomia, ECC)**
- **Pts with behavioral or medical management challenges**
- **Patients without access to dental care**
- **Community-based, outreach programs**

Case Selection

- Seifo *et al.* The use of silver diamine fluoride (SDF) in dental practice. *Br Dent J* **228**, 75–81 (2020).
<https://doi-org.lp.hscl.ufl.edu/10.1038/s41415-020-1203-9>
- <https://kidsteethandbraces.com/silver-diamine-fluoride/>

Table 2 Detailed indications, contra-indications, advantages and disadvantages of NRCC for primary teeth by tooth and person level factors

Uses of SDF		
	Level	Description
Indications	Tooth	Asymptomatic cavitated dentine carious lesions in primary teeth
		Lesions that are, or can be made, cleansable
		Non-restorable dentinal lesions
		Several carious lesions that may not all be treated in one visit
		Root surface carious lesions (primary and permanent teeth)
		Non-carious cervical lesions giving sensitivity
		Molar incisor hypomineralisation to reduce sensitivity
	Person	Pre-cooperative children, children and adults whose behaviour/ medical conditions limit invasive restorative treatment and where there is a need to 'buy time' to avoid or delay treatment with sedation or general anaesthesia
		Patients with high caries risk with medical or psychological conditions that limit other treatment approaches eg patient with dental phobia, medical conditions or disabilities
		Patients who already have a high standard of brushing or are likely to be responsive to measures to change behaviour to carry out frequent, high quality toothbrushing or other methods to clean carious lesions
Contra-indications	Tooth	Clinical signs or symptoms of irreversible pulpitis, or dental abscess/fistula
		Radiographic signs of pulpal involvement, or peri radicular pathology
		Inflection or pain from pulp or food packing (unless shape of tooth can be changed to become cleansable)
		Ongoing active lesions that are not arresting (only detectable over time)
	Person	Not able or willing to brush and unlikely to. Patients (or parents) unable or unwilling to take responsibility
		Potassium iodide is contra-indicated in pregnant or breastfeeding women, patients undergoing thyroid gland therapy or on thyroid medication or patients with known allergy to potassium or iodine.
		Patients with ulceration, mucositis, stomatitis.
		Patients with allergy to silver, fluoride or ammonia

38% SDF Treatment

- Consent
- Protect the counters and patient (covers, eyewear, gloves etc)
- 1 drop of SDF into a dish (treats ~1-5 teeth)
- Remove excess saliva, gross debris
- Isolate with cotton rolls
- Apply petroleum jelly to gingiva near affected areas
- Dry (gently w air or cotton)
- Apply with micro-brush to the lesion
- Allow to absorb for 1 min (protect w FV)
- No rinsing
- 1-2 x/year (most studies)



Considerations for SDF Use

- ✓ No excavation, decay removal or anesthesia needed
- ✓ Irreversible pulpitis is a contra-indication
- ✓ Does not stain sound tooth tissue
- ✓ Darkening of the lesions occur over 24 hrs and days (do not light-cure)
- ✓ SDF can stain the skin which will clear in 2-3 weeks without treatment
- ✓ SDF can permanently stain surfaces, clothes
- ✓ D1354 – Interim Caries Arresting Medicament application – per tooth



The Journal **EVIDENCE-BASED DENTISTRY** FOR ALL PRACTICES

REVIEW ANALYSIS & EVALUATION

LIMITED EVIDENCE LINKS SILVER DIAMINE FLUORIDE AND CARIES ARREST IN CHILDREN

 Cochrane

REVIEW
NUMBER 10028

The authors conducted a systematic review of clinical studies to investigate the effectiveness of silver diamine fluoride for arresting dental caries in children.

ARTICLE TITLE AND BIBLIOGRAPHIC INFORMATION

Clinical trials of silver diamine fluoride in arresting caries among children: A systematic review. Gao SE, Zhao JS, Hsieh H, Suangchi D, Mei ML, Lu JCM, Chiu CH. J Clin Oral Res. 2016;1:201-10.

SUMMARY

COST SCORE

1 2 3 4 5

2

Low Strength of Recommendation Scoring

LEVEL OF EVIDENCE

1 2 3 4

2

See page 10 for details, copyright reporting 1001 and 1002-10
CMAA policy option



Effect and acceptance of silver diamine fluoride treatment on dental caries in primary teeth

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Keywords

Silver diamine fluoride; dental caries; public health dentistry

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e-mail: jgold@ufl.edu. Jennifer Clemens, Jaana Gold and Jeffrey Chaffin are with the College of Graduate Health Studies, AT Still University. Jennifer Clemens is a resident at the College of Graduate Health Studies dental public health program.

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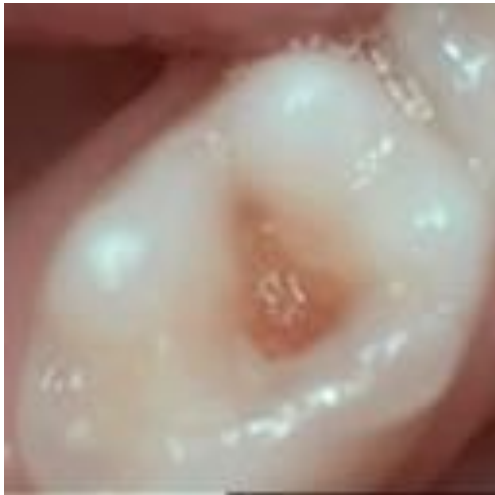
Abstract

Objective: Silver diamine fluoride (SDF) treatment has been identified as a potential solution to address the dental public health issues of untreated dental caries and insufficient access to care. The current study assessed the effectiveness of 38 percent SDF in arresting active dental caries lesions and in reducing or preventing associated dental pain and infections in young, at-risk children.

Methods: We enrolled 32 children aged 2-5 years with 118 active caries lesions in primary teeth from a community dental clinic in Oregon. After baseline examinations, carious lesions were treated with 1-2 applications of 38 percent SDF. Children were re-evaluated at 3-week and 3-month recalls to assess color and consistency changes in lesions (with/without). Parents were interviewed regarding symptoms of pain or infection and were surveyed regarding subjective feelings about SDF.

Results: Of 102 lesions (16 excluded from analyses), 100 were found to be arrested at first recall and all at second recall. The duration of SDF application was not associated with arrest of decay ($P = 0.68$). No incidence of pain or infection of an SDF-treated tooth was recorded. Parental impression of ease of application, taste, and esthetics was favorable.

Conclusions: Our results suggested SDF was effective in arresting active caries lesions in primary teeth in young children and was well accepted by parents. SDF offers an easy and highly efficient non-surgical alternative treatment to traditional restorative dental treatment in young children, and it has great potential to aid the dental public health community to address dental caries in at-risk populations.



- A clinical study in Oregon showed 100% arrest after 3 months
- 100% acceptance by parents



2 week recall – Dr Gold



Dr Gold/2016





Evidence-Based Clinical Practice Guideline on Nonrestorative Treatments for Carious Lesions: A Report from the American Dental Association

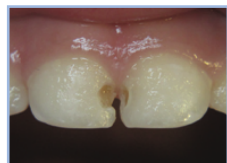
Summary of clinical recommendations for the nonrestorative treatment of caries on **primary teeth**

GRADE Certainty in the Evidence

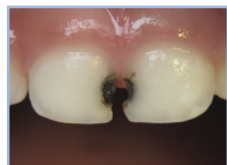
High	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate	We are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect.
Low	Our confidence in the effect estimate is limited.
Very Low	We have very little confidence in the effect estimate.

GRADE Interpretation of Strength of Recommendations

Implications	Strong Recommendations	Conditional Recommendations
For Patients	Most individuals in this situation would want the recommended course of action and only a small proportion would not.	The majority of individuals in this situation would want the suggested course of action, but many would not.
For Clinicians	Most individuals should receive the intervention.	Recognize that different choices will be appropriate for individual patients and that you must help each patient arrive at a management decision consistent with his or her values and preferences.
For Policy Makers	The recommendation can be adapted as policy in most situations.	Policy making will require substantial debate and involvement of various stakeholders.



Before SDF Application



After SDF Application

Expert Panel Recommendation	Certainty in the Evidence	Strength of Recommendation
To arrest advanced cavitated carious lesions on any coronal surface of primary teeth , the expert panel recommends clinicians* prioritize the use of 38% silver diamine fluoride (SDF) solution (biannual application) over 5% sodium fluoride varnish (application once per week for 3 weeks). [†]	Moderate	Strong
To arrest or reverse noncavitated carious lesions on occlusal surfaces of primary teeth , the expert panel recommends clinicians* prioritize the use of sealants + 5% sodium fluoride varnish (application every 3–6 months) or sealants alone over 5% sodium fluoride varnish alone (application every 3–6 months), 1.23% acidulated phosphate fluoride gel (application every 3–6 months), resin infiltration + 5% sodium fluoride varnish (application every 3–6 months), or 0.2% sodium fluoride mouthrinse (once per week). [‡]	Moderate	Strong
To arrest or reverse noncavitated carious lesions on facial or lingual surfaces of primary teeth , the expert panel suggests clinicians* use 1.23% acidulated phosphate fluoride gel (application every 3–6 months) or 5% sodium fluoride varnish (application every 3–6 months). [‡]	Moderate to Low	Conditional
To arrest or reverse noncavitated carious lesions on approximal surfaces of primary teeth , the expert panel suggests clinicians* use 5% sodium fluoride varnish (application every 3–6 months), resin infiltration alone , resin infiltration + 5% sodium fluoride varnish (application every 3–6 months), or sealants alone . [‡]	Low to Very Low	Conditional
To arrest or reverse noncavitated carious lesions on coronal surfaces of primary teeth , the expert panel suggests clinicians* <i>do not use</i> 10% casein phosphopeptide–amorphous calcium phosphate paste if other fluoride interventions, sealants, or resin infiltration is accessible.	Low	Conditional

SDF = silver diamine fluoride

* “Clinicians” refers to the target audience for this guideline, but only those authorized/trained to perform the specified interventions should do so.

† In keeping with the concept of informed consent, all nonrestorative and restorative treatment options and their potential side effects (such as blackened tooth surfaces treated with silver diamine fluoride) should be offered and explained to all patients.

‡ The order of treatments included in this recommendation represents a ranking of priority defined by the panel when accounting for treatment effectiveness, feasibility, patients’ values and preferences, and resource utilization. Considerations such as a particular patient’s values and preferences, special needs, or insurance status should inform clinical decision making.

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Evidence-Based Clinical Practice Guideline on Nonrestorative Treatments for Carious Lesions: A Report from the American Dental Association

Summary of clinical recommendations for the nonrestorative treatment of caries on **permanent teeth**

GRADE Certainty in the Evidence

High	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate	We are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect.
Low	Our confidence in the effect estimate is limited.
Very Low	We have very little confidence in the effect estimate.

GRADE Interpretation of Strength of Recommendations

Implications	Strong Recommendations	Conditional Recommendations
For Patients	Most individuals in this situation would want the recommended course of action and only a small proportion would not.	The majority of individuals in this situation would want the suggested course of action, but many would not.
For Clinicians	Most individuals should receive the intervention.	Recognize that different choices will be appropriate for individual patients and that you must help each patient arrive at a management decision consistent with his or her values and preferences.
For Policy Makers	The recommendation can be adapted as policy in most situations.	Policy making will require substantial debate and involvement of various stakeholders.



Before SDF Application



After SDF Application

Expert Panel Recommendation	Certainty in the Evidence	Strength of Recommendation
To arrest advanced cavitated carious lesions on any coronal surface of permanent teeth , the expert panel suggests clinicians* prioritize the use of 38% silver diamine fluoride (SDF) solution (biannual application) over 5% sodium fluoride varnish (application once per week for 3 weeks).†	Low	Conditional
To arrest or reverse noncavitated carious lesions on occlusal surfaces of permanent teeth , the expert panel recommends clinicians* prioritize the use of sealants + 5% sodium fluoride varnish (application every 3–6 months) or sealants alone over 5% sodium fluoride varnish alone (application every 3–6 months), 1.23% acidulated phosphate fluoride gel (application every 3–6 months), or 0.2% sodium fluoride mouthrinse (once per week).‡	Moderate	Strong
To arrest or reverse noncavitated carious lesions on facial or lingual surfaces of permanent teeth , the expert panel suggests clinicians* use 1.23% acidulated phosphate fluoride gel (application every 3–6 months) or 5% sodium fluoride varnish (application every 3–6 months).‡	Moderate to Low	Conditional
To arrest or reverse noncavitated carious lesions on approximal surfaces of permanent teeth , the expert panel suggests clinicians* use 5% sodium fluoride varnish (application every 3–6 months), resin infiltration alone , resin infiltration + 5% sodium fluoride varnish (application every 3–6 months), or sealants alone .‡	Low to Very Low	Conditional
To arrest or reverse noncavitated and cavitated carious lesions on root surfaces of permanent teeth , the expert panel suggests clinicians* prioritize the use of 5,000 ppm fluoride (1.1% sodium fluoride) toothpaste or gel (at least once per day) over 5% sodium fluoride varnish (application every 3–6 months), 38% SDF + potassium iodide solution (annual application), 38% SDF solution (annual application), or 1% chlorhexidine + 1% thymol varnish (application every 3–6 months).‡,§	Low	Conditional
To arrest or reverse noncavitated carious lesions on coronal surfaces of permanent teeth , the expert panel suggests clinicians* <i>do not use</i> 10% casein phosphopeptide-amorphous calcium phosphate paste if other fluoride interventions, sealants, or resin infiltration is accessible.	Low	Conditional

SDF = silver diamine fluoride

ppm = parts per million

* “Clinicians” refers to the target audience for this guideline, but only those authorized/trained to perform the specified interventions should do so.

† In keeping with the concept of informed consent, all nonrestorative and restorative treatment options and their potential side effects (such as blackened tooth surfaces treated with silver diamine fluoride) should be offered and explained to all patients.

‡ The order of treatments included in this recommendation represents a ranking of priority defined by the panel when accounting for treatment effectiveness, feasibility, patients’ values and preferences, and resource utilization. Considerations such as a particular patient’s values and preferences, special needs, or insurance status should inform clinical decision making.

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Early Prevention

- Prevent frequent consumption of liquids containing sugar
- For infants, avoid bottles containing formula, juice or other sweetened drinks
- Brush 2x daily using a soft toothbrush and a small amount (rice-sized) of fluoridated toothpaste for children under 3.
- For children 3–6 years, use a pea-sized amount of fluoridated toothpaste



Summary

- Oral health is essential to overall health for children and their families
- Sugary drinks harm our health and contribute to serious diseases, like obesity and diabetes, that disproportionately affect Black and Latin communities.
- We need to improve oral health of children and their families (e.g., racial/ethnic minorities, those with lower education, or with lower income)
- Dental caries is preventable
- We need to improve access to preventive and comprehensive oral care, particularly among the most vulnerable groups
- Integrate oral health care into overall health care



Major Messages

- **Concerted efforts among all segments of society are needed to support healthy lifestyle choices.**
- **Professionals have an important role in leading disease-prevention efforts.**
- **Collaborative efforts can have a meaningful impact on the health of current and future generations.**



Resources

- Healthy Eating Research, a national program of the Robert Wood Johnson Foundation <https://healthydrinkshealthykids.org/professionals/>
- US HHS Office of Disease Prevention and Health Promotion 2020–2025 Dietary Guidelines NEW!!!
- <https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials>
- ChooseMyPlate.gov
- ADA EBD <https://ebd.ada.org/en>
- AHA <https://www.heart.org/en>

Next ...

- Motivational Interviewing webinar
May 12th 2021 at noon.
- Recordings and handouts at the
Project Website

<http://www.floridahealth.gov/programs-and-services/community-health/dental-health/oralhealthandnutrition/index.html>





Questions?

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